DOCUMENT RESUME

ED 459 208 TM 033 507

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TITLE	Assessment and the Adult Learner: Does Authentic Assessment Influence Learning?
PUB DATE	2001-10-00
NOTE	22p.; Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (Chicago, IL, October 24-27, 2001).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150) -- Tests/Questionnaires (160)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Adults; *Graduate Students; Higher Education; *Performance Based Assessment; Portfolio Assessment; Skill Development; *Student Evaluation; Teacher Education; Teachers; *Thinking Skills

ABSTRACT

The purpose of this study was to determine whether a performance-based assessment system newly implemented in a graduate education (Masters of Education) program was related to the development of adult learners' cognitive skills. This assessment system required that learners develop and maintain a professional teaching portfolio showing evidence of the effective application of course knowledge in their P-12 classroom. Course-specific authentic assessments were included in this system, as well as a limited number of traditional assessment pieces. Participants completed a survey during the final class of each of 8 courses, for a total of 2,567 survey responses grouped into 2 sets from June 1998 through May 1999. There were three primary findings. First, clusters or composites of instructional and curricular strategies tended to function together in relation to participants' perceived growth in cognitive skills. The same four composites were identified in each of the two survey sets. The second finding was that the curricular strategies clustered and, as a composite, strongly correlated with participants' perceived growth in cognitive skills. This strong correlation was also evident in both survey sets. The third finding was that, in both survey sets, assessment practices clustered and tended to function together in relation to participants' perceived skill growth. Although the study's results do not strongly support the use of performance-based assessment, both current educational theory and professional common sense do support its use. The survey is attached. (Contains 40 references.) (SLD)

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Assessment and the Adult Learner: Does Authentic Assessment Influence Learning?

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A paper presented at the
Annual Conference
of the
Mid-West Educational Research Association
October, 2001
Chicago, IL

TM033507

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Within the educational community, the role of assessment is hotly debated. Whether the learner is a second grader in formal education or an adult in a professional development program, the questions are the same. How is learning effectively assessed? Can the process of that assessment enhance a learner's education?

Across the educational spectrum, from formal to non-traditional contexts and from GED programs to professional institutions, assessment strategies are being evaluated and redesigned. The goal: to develop assessment systems that both appraise student learning and contribute to the learning process.

Study Purpose and Context

The purpose of this study was to determine whether a performance-based assessment system newly implemented in a graduate education program was related to the development of adult learners' cognitive skills. This assessment system required that learners develop and maintain a professional teaching portfolio showing evidence of the effective application of course knowledge in their P-12 classroom. Course-specific authentic assessments were included in this system, as well as a limited number of traditional assessment pieces. The research question of this study was – Does this newly implemented performance-based assessment system positively impact participants' perceived growth in cognitive skills?

The study context was the Graduate Studies in Education division of the College of Adult and Professional Studies, Indiana Wesleyan University. This College of Adult

and Professional Studies was established to meet the educational needs of the working professional adult. It offers its constituency graduate degree programs in business, nursing, and education. Evening, Saturday, and online courses are offered at more than 60 off-campus locations and extensive off-campus support services are provided.

In this study, the performance-based assessment system was implemented in the Masters of Education program. The professional teaching portfolio required of participants reflected their workplace performance, and was assessed by a peer, an on-site mentor, and a university advisor. Each program participant was an experienced educator, teaching in an elementary or secondary public school classroom.

Theoretical Framework

The theoretical framework of this study was the social learning theory of Johnson and Johnson (1994) and the assessment theory of Wiggins (1998). The Social Interdependence Theory of Johnson and Johnson assumed the way social interdependence was structured determined how individuals interact, which, in turn, determined behaviors. This theory provided a framework for the educational context of this study. In this study context, study groups and cohort communities supported learners' acquisition of knowledge, attitudes and skills. This context was based upon the theoretical assumption that positive social interdependence and collective affective and cognitive interaction stimulate meaningful learning.

Wiggins' Assessment Theory (1998) stated that the assessment process enhances learning when designed as a coordinated set of authentic, performance-based learning activities. This theory provided the foundation for the redesign of the Masters of

Education program's assessment system. A theoretical assumption of this study was that learning would be positively impacted if assessment activities were aligned with performance-based course expectations and tied to workplace performance.

Review of Literature

A Nation At Risk (National Commission on Excellence in Education, 1983) was the first in a series on national policy documents that claimed that the performance of American schools was in decline. According to these documents, the decline was evidenced by dropping standardized test scores, unfavorable international comparisons, and inadequate workplace performance of public school graduates. Educational reformers recognized the need for significant changes in educational assessment practices (Archbald and Newman, 1992; Peterson, 2000; Wiggins and McTighe, 2000). Over the past two decades, calls for reform have addressed both large-scale institutional assessment initiatives and smaller scale professional and classroom assessment practices.

An aspect of the movement to improve educational assessment practices has focused on authentic and performance-based assessments. Questions of consistency, validity and reliability have been raised (Charles and Mertler, 2002; CRESST, 1993). Assumptions about the contribution of such assessment activities to the learning process have been challenged (National Center for Postsecondary Improvement, 1999). However, educators concede that performance-based assessments represent "a new paradigm focusing on the performance of many effective strategies and practices required to become a successful and competent educational leader" (Meadows and Dyal, 1998, p. 94).

A key to the successful development of performance-based assessment instruments is stakeholder involvement. Green and Smyser (1996) observed that one-size-fits-all assessments reflect something done to students as opposed to something students do for themselves. They suggest that students play a more active role in assessment development. A shift to student involvement reflects the emerging attitude of educators that assessment should be an activity that makes a positive contribution to all stakeholders. Angelo (1994) stated, "If assessment is ever to improve substantively the quality of student learning, and not just provide greater accountability and efficiency, both faculty and students must become actively, continuously and personally involved" (p. 4).

The idea that assessment can improve the quality of student learning has fueled the move toward developing more authentic, performance-based assessments for all educational contexts – P-12 education, post-secondary education and adult education. These alternative assessments are designed to encourage students to think critically and to draw their own conclusions to complex problems (CRESST, 1993; Wiggins and McTighe, 2000). The function of performance-based assessments is to provide students with the opportunity to use prior knowledge, new learnings and appropriate skills to actively respond to complex tasks and solve significant and realistic problems. Learners, therefore, are viewed as active participants in the educational process, constructing meaning from new information and integrating their existing knowledge with new learning (Wittrock, 1991).

The move toward more authentic assessments has encouraged educators to define the characteristics of high quality assessments and establish parameters for their

development. Angelo and Cross (1993) have noted that assessments should be student-center, teacher-directed and mutually beneficial. There is a growing consensus that new assessments should be multidimensional, measuring a broad range of abilities and interests (Courts and McInerney, 1993; Darling-Hammond and Falk, 1997; Peterson, 2000). They should be linguistically appropriate and sensitive to multiple cultures and perspectives (Gordon, 2001; Linn, Baker and Dunbar, 1991). Performance-based assessments should also be value-driven, on-going, and integrated with the learning process (Astin, Banta and Cross,1992; Peterson, 2000).

The professional portfolio is a performance-based assessment instrument being implemented across professional contexts. Educators are finding that a professional teaching portfolio is a powerful tool for professional development (Van Wagenan and Hibbard, 1998) and for fostering problem solving and self-evaluation in pre-service teachers (Mokhtari and Yellin, 1996). Wolf (1996) has stated, "Although portfolios can be time consuming to construct and cumbersome to review, they can also capture the complexities of professional practice in ways that no other approach can. Not only are they an effective way to assess teaching quality, but they also provide teachers with opportunities for self-reflection and collegial interactions based on documented episodes of their own teaching" (p. 34).

Performance-based assessment practices have been developed in response to the growing concern among educators that traditional assessment practices were not meeting the learning needs of students. By involving more stakeholders in the assessment process and focusing assessment on student learning, educators have made progress toward designing high quality authentic assessment instruments. Professional portfolios are

among the tools being effectively used to promote professional and student growth through self-reflection, problem-solving, and collegial decision-making.

Method and Evidence

Prior to implementing the redesigned assessment system, a program survey was conducted over a one-year period, June 1998 through May 1999. Participants in the Graduate Studies in Education program completed the survey during the final class of each of eight graduate education courses (N = 2,567).

This survey was divided into two sections (Appendix A). Nineteen questions focused on instructional and curricular strategies. Students were asked to rate the effectiveness of these strategies on a five-point Likert scale from "not at all effective (1)" to "completely effective (5)." Ten questions focused on cognitive skill growth. Students were asked to rate the effectiveness of the completed course in helping them develop specific cognitive skills. Again, the ratings were on a five-point Likert scale ranging from "not at all effective (1)" to "completely effective (5)." The survey responses were then analyzed (Saunders, Batson & Saunders, 2000).

The redesigned performance-based assessment system was implemented program-wide by the Fall of 2000. A program survey was then conducted over a six-month period, January through June, 2000. Participants in the Graduate Studies in Education program completed the same program survey of 29 questions as described above (N = 578).

Using the statistical program SPSS, several statistical analyses were conducted using the data collected from both sets of surveys. These analyses tested for correlations

between the independent variables (instructional and curricular strategies) and each of the ten dependent variables (cognitive skills) in each survey set.

First, a *Pearson correlation coefficient* was run of each survey set. Next, a *multiple regression analysis* was conducted of each survey set. This analysis highlighted correlations between specific instructional and curricular strategies and specific cognitive skills.

A *factor analysis* was then conducted on each survey set, using a varimax rotation. This analysis found four key clusters or composites of instructional and curricular strategies.

A *multiple regression analysis* was conducted of each survey set, testing the correlation between the instructional and curricular composites (the independent variables) and each of the ten cognitive skills (the dependent variables). This *multiple regression analysis* was conducted again while controlling for course and for a selection of instructors.

Interview evidence was also collected to provide a different perspective on the relationship between the program's instructional and curricular strategies and participants' perceived cognitive skill growth. Focus group interviews were held with five randomly selected cohort communities.

Each survey set was analyzed separately. Analysis results of each set were then compared to one another to uncover relationships and patterns. Special attention was paid to the impact of traditional assessment strategies (1998 survey responses) and performance-based assessment strategies (2000 survey responses) upon perceived learner growth in cognitive skills.

Findings

1. MULTIPLE REGRESSION ANALYSIS OF THE WHOLE SAMPLE

A Correlation of the 19 instructional strategies with the 10 meta-skills

META-SKILL	*Instructor Strategy*	beta
1. World view	13. Faith evident	.35
2. Ethics	13. Faith evident	.21
3. Lifelong learning		
4. Reading	19. Textbook	.30
5. Critical thinking		
6. Problem solving		
7. Writing	16. Homework	.20
8. Oral		
9. Finding information	16. Homework	.20
10. Teamwork	17. Discussion	.20

Beta coefficient with a significance of .01 or better. * indicates .05 or better.

N: 2,567 responses

2. FACTOR ANALYSIS

A factor analysis with a varimax rotation was completed on the whole sample. Four key components or clusters of instructional strategies emerged. The "Composite Instructional Strategies" were the following:

Composite Instructional Strategy #1: questions 1 - 7 = Andragogy
Composite Instructional Strategy #2: questions 8 - 10, 18 = Assessment
Composite Instructional Strategy #3: questions 15 - 17, 19 = Curriculum
Composite Instructional Strategy #4: question 13 = Faith

End of Course Survey Question	*Composite Instructional Strategy*			
	#1: Andragogy	#2: Assessment	#3: Curriculum	#4: Faith
1	.68			
2	.61			
3	.70			
4	.72			
5	.72			
6	.50			
7	.57			
8		.64		
9		.84		
10		.84		
11				
12				
13				.69
14				
15			.69	
16			.76	
17			.68	
18		.66		
19			.71	

N: 2,567 responses

3. MULTIPLE REGRESSION ANALYSIS OF THE FOUR COMPOSITE INSTRUCTIONAL STRATEGIES WITH THE TEN META-SKILLS

M.Ed. Program Survey: June 1998 through May 1999
N: 2,567 responses

META-SKILL	*Andragogy*	*Assessment*	*Curriculum*	*Faith*
1. World view			.27	.34
2. Ethics	.21		.33	.21
3. Lifelong	.27		.35	
4. Reading			.50	
5. Critical thinking	.24		.40	
6. Problem solving			.42	
7. Writing			.37	
8. Oral	.21		.36	
9. Information			.43	
10. Teamwork			.30	

Beta coefficient with a significance of .01 or better. * indicates .05 or better.

M.Ed. Program Survey: January through June 2000
N: 578 responses

META-SKILL	*Andragogy*	*Assessment*	*Curriculum*	*Faith*
1. World view			.44	.37
2. Ethics			.57	.22
3. Lifelong	.16		.49	.17
4. Reading			.63	.12
5. Critical thinking	.20		.52	.11
6. Problem solving	.17		.51	.13
7. Writing		.15	.48	.16
8. Oral	.21		.47	.15
9. Information			.59	.16
10. Teamwork	.12		.47	.12

Beta coefficient with a significance of .01 or better. * indicates .05 or better.

Discussion

The purpose of this study was to evaluate the effectiveness of a newly implemented performance-based assessment system in a professional education setting. The research question of this study was – Does this newly implemented performance-based assessment system positively impact participants' perceived growth in cognitive skills?

Three primary findings resulted from this study. First, clusters or composites of instructional and curricular strategies tended to function together in relation to participants' perceived growth in cognitive skills. The same four composites were identified in each of the two survey sets.

Although these composites were identified through factor analysis, each composite was predicted and supported by recognized educational theory. The theoretical support for each composite hypothesized a positive relationship between specific strategies and student growth, explained how individual strategies complemented one another, and described the relationships between these instructional strategies.

The second finding was that the curricular strategies clustered and, as a composite, strongly correlated with participants' perceived growth in cognitive skills. This strong correlation between the curricular strategy composite and participants' reported cognitive skill growth was evident in both survey sets.

The context of this study was based on social learning theory and designed to be student-centered and collaborative. A large body of research confirmed that a collaborative context, coupled with an interactive, relevant curriculum, supports cognitive

skill attainment (Ahern-Rindell, 1998; Johnson, Johnson & Smith, 1994; Smith, 1994; Wilson, 1993).

The third finding was that, in both survey sets, assessment practices clustered and tended to function together in relation to participants' perceived cognitive skill growth. In the set of 1998-1999 survey responses, traditional assessment strategies correlated with no perceived growth in cognitive skills. That is, when analyzed through a multiple regression analysis, there was no significant correlation found between the program's assessment practices of 1998–1999 and participants' self-reported growth in cognitive skills.

In the set of 2000 survey responses, performance-based assessment strategies correlated with perceived growth of only one cognitive skill. Although the correlation between the program's assessment practices of 2000 and participants' self-reported growth in cognitive skills was stronger than the 1998 survey responses, the only *significant* correlation was with the cognitive skill of communicating "effectively through writing."

Wiggins and McTighe (1998) have stated the effectiveness of assessment is ultimately determined by its achievement of desired learnings. Danielson claims it is through assessment that students advance their understandings (1996). In this study, traditional assessment practices were unrelated to participants' reported cognitive skill growth. Therefore, according to current assessment theory, traditional assessment practices potentially inhibited participants from achieving desired learnings and advancing their understandings.

Also in this study, performance-based assessment practices were significantly related to participants' perception of growth in only one of ten cognitive skills. The answer, then, to this study's research question - Does this newly implemented performance-based assessment system positively impact participants' perceived growth in cognitive skills? – must be, "Only slightly."

Several steps may be taken to increase the positive impact of this newly implemented performance-based assessment system. It is likely that staff development opportunities for professors implementing the new assessment system should be improved. McTighe (1996) stated that, if we expect students to learn from authentic assessment practices, then educators must engage in "performance-based instruction." Creating authentic and meaningful learning experiences, encouraging learner decision-making, maintaining a sensitivity to multiple cultures and perspectives, and publicizing performance standards are instructional strategies suggested to enhance "performance-based instruction" (AAHE Assessment Forum, 1992; Dietel, Herman and Knuth, 1991; Gordon, 2001; Herrington and Herrington, 1998; McTighe, 1996).

It is possible that participants need more time and training to develop the new skills required of performance-based assessment. Haller, Child and Walberg (1998) suggest that cognitive skills required for performance-based assessment be explicitly taught. Self-reflection (Burke, 1997), informed decision-making (McTighe, 1996), and a holistic view of the teaching and learning process (Cerbin, 1994) help equip the student to learn from the process of performance-based assessment.

It also may be that professors and participants alike need to learn how to learn in this new educational context that is supported by performance-based assessments. When

performance-based assessments become foundational to the learning process, Postman and Weingartner's "Immunization Theory of Education" is no longer operative. Revisiting and revising learned skills, knowledge and dispositions become the norm and learning becomes an ongoing activity. Shanker (1996) stated that performance-based assessment must offer "serious intellectual content, take explicit account of the various contexts of teaching, offer support for informed dissent, be ongoing, and imbedded with purpose ..." (p. 223). Learning to learn in this educational context may require time and creative effort.

It is clear that further research is needed to answer the many questions raised by this study. Although this study's results do not strongly support the use of performance-based assessment, both current educational theory and professional common sense do support its use. If assessment can enhance student learning, then it deserves continued dialogue and research.

Conclusion

The most current thinking among educators is that assessment reform is needed across educational contexts (Bond, 2000). Bond, Herman, and Arter (1994) have stated that we must change our assessment strategies to tie assessment design and content to new outcomes and purposes for assessment. A new purpose for assessment is to foster learning of worthwhile academic content, while providing educators with evidence for making decisions about curriculum and teaching (Porter, 2000). A new assessment design and content has been identified as authentic and performance-based, and is

regarded as more reflective of new curricular goals and methods of instruction (Geltner, 1993; *National Commission on Teaching and America's Future*, 1996).

The purpose of this study was to evaluate the effectiveness of a newly implemented performance-based assessment system in a professional education setting. This assessment system required that learners develop and maintain a professional portfolio showing evidence of the effective application of course knowledge in the workplace.

Professional portfolios are being developed and evaluated across professional contexts. How can they effectively assess the strengths and areas for growth of the professional? How can they be used to encourage professional reflection and development? How can they enhance the learning process? Questions abound. Until research on the effectiveness of such assessment practices as portfolio development is conducted, presented, discussed, and evaluated, the questions will remain unanswered.

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APPENDIX A

End of Course Survey

Instructions: Answer each question as precisely as you can. Circle only one response for each question. If the question does not apply to you leave it blank. Give the Survey to the Class Representative who will forward them collectively to the Research Specialist.

Core Group _____ Course #_____ Instructor _____

Beginning Date _____ Ending Date _____

For proper processing please fill in all above information.	not at all	very little	some-what	mostly	com-pletely
Instructor					
1. The instructor's professional and academic experiences were appropriate to teach and facilitate this course.	1	2	3	4	5
2. The instructor made good use of the allotted class time.	1	2	3	4	5
3. The instructor was effective in helping me share my professional knowledge.	1	2	3	4	5
4. The instructor treated me and my colleagues as professional adults.	1	2	3	4	5
5. The instructor was effective in encouraging and motivating me and my colleagues.	1	2	3	4	5
6. The instructor made effective use of the textbooks and the module.	1	2	3	4	5
7. The instructor made it clear how the subject matter could enhance my professional growth.	1	2	3	4	5
8. The instructor established clear criteria for grading my assignments. (Assignments include in-class and out-of-class work that is graded.)	1	2	3	4	5
9. The instructor's assessment of my assignments, to date, accurately reflect my performance.	1	2	3	4	5
10. The instructor provided timely, adequate feedback on the quality of graded assignments.	1	2	3	4	5
11. The instructor set high standards for achievement in this course.	1	2	3	4	5
12. The instructor was accessible to me beyond the regular class period.	1	2	3	4	5
13. The instructor's Christian faith was evident.	1	2	3	4	5
14. On the average, our class began and ended on time.	1	2	3	4	5
Curriculum					
1. The module/syllabus was written clearly.	1	2	3	4	5
2. The outside activities/assignments helped me to understand and make use of the knowledge I gained from this course.	1	2	3	4	5
3. The in class activities/assignments helped me to discuss key concepts and experiences with other adult learners.	1	2	3	4	5
4. The grading procedures measured what I actually learned, performed, and produced.	1	2	3	4	5
5. I was able to understand the information in the textbook	1	2	3	4	5

(over)

	not at all	very little	some-what	mostly	com-pletely
Ten Across Objectives **Rate the effectiveness of this course in helping me attain:**					
1. The ability to see things from the perspective of a Christian world view.	1	2	3	4	5
2. Skill in ethical thought and action.	1	2	3	4	5
3. Values and skills necessary for lifelong learning.	1	2	3	4	5
4. The ability to read complex materials with comprehension.	1	2	3	4	5
5. Skill in thinking critically concerning ideas and performance (i.e. reflective practice).	1	2	3	4	5
6. Skill in problem solving and decision making.	1	2	3	4	5
7. The ability to communicate effectively through writing.	1	2	3	4	5
8. The ability to communicate effectively orally.	1	2	3	4	5
9. The ability to find needed information (sometimes called information literacy).	1	2	3	4	5
10. The ability to work effectively in teams.	1	2	3	4	5

Comments: (please print legibly)

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